ORIGINAL


# MEMORANDUM





To: THE COMMISSION

From: Steven M. Olea
Interim Director
Safety Division

Date: April 22, 2011

RE: IN THE MATTER OF THE APPLICATION OF THE UNION PACIFIC RAILROAD COMPANY TO ALTER TWO CROSSINGS OF THE UNION PACIFIC RAILROAD AT RUTHRAUFF AND INA ROADS.

DOCKET NO. RR-03639A-11-0051

## Background

On January 31, 2011, the Union Pacific Railroad Company ("Railroad") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Railroad to alter two crossings of the Railroad in Arizona by adding a second mainline track. The Ruthrauff Road crossing, USDOT No. 741-104C, is located in the City of Tucson ("Tucson"), Pima County ("County") and the Ina Road crossing, USDOT No. 741-101G, is located in the Town of Marana ("Marana").

## RUTHRAUFF ROAD

Commission Railroad Safety Section Staff ("Staff") records do not indicate a Commission Decision approving the installation of automatic devices at Ruthrauff Road. However, inventory records do indicate the presence of flashing lights, automatic gates and bells as early as 1974.

On February 28, 2007, Staff, the Railroad, County, and Tucson participated in the diagnostic review of the proposed improvements at Ruthrauff Road. All parties present were in agreement to the proposed improvements at the crossing. The following is a break down of the crossing in this application, including information about the crossing that was provided to Staff by the Railroad and its contractors.

## Geographical Information

Ruthrauff Road is located in Pima County within the city limits of Tucson. As of 2010 the U.S. Census Bureau puts the City's population at 520,116 and the metropolitan area at 1,020,200. In 2009, Tucson ranked as the 32nd largest city and 52nd largest metropolitan area in the U.S. It is the largest city in southern Arizona and the second largest in the State.

The rail line in this area runs in a southeast to northwest direction, parallel to Interstate 10 ("I-10") and the I-10 Frontage Road. Ruthrauff Road is an east to west main arterial with an interchange at I-10. The general area surrounding the railroad crossing is a mix of commercial and industrial businesses. (See Appendix "A"). The Ruthrauff Road crossing is located in the southwest part of Tucson near the intersection of Ruthrauff Road and the Westbound I-10 Frontage Road. Although the Ruthrauff Road crossing is located within Tucson, the County is the road authority with jurisdiction over Ruthrauff Road at the crossing location.

The proposed new main track will be located on the south side of the existing main line. The Railroad will re-profile a portion of the four lane urban asphalt road to meet the new tracks. The Railroad's proposed upgrades will replace the existing incandescent flashing lights, gate mechanisms, bells and detection circuitry, with the latest in industry standards to include: 12 inch LED flashing lights, a cantilever with 12 inch LED flashing lights for westbound traffic, gates, bells, and constant warning time circuitry. A new concrete crossing surface will be added, along with replacing any impacted pavement markings. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing upgrade is $628,200. The Railroad is paying for the entire cost of the crossing improvements, broken down by signal and crossing surface work, with the signal work costing $480,000 and the crossing surface $148,200.

Traffic data for Ruthrauff Road was provided to the Railroad by Jennifer Crumbliss of HDR Engineering and Tom Cooney of the Pima Association of Governments ("PAG") in April 2011. The data provided showed the Average Daily Traffic ("ADT") for 2009 to be 23,680 vehicles per day ("vpd"). Data provided indicated the estimated ADT for the year 2040 to be 49,170 vpd. The current Level of Service ("LOS") for this four lane road is LOS A for eastbound AM peak hour traffic and LOS B for eastbound PM peak hour traffic. For westbound traffic, the LOS for AM peak hour traffic is level D and for PM peak hour travel, LOS is C.

**Note:** The American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Ruthrauff Road is 45 MPH. Staff records, as well as Federal Railroad Administration ("FRA") accident/incident records indicate three accidents at this crossing with one fatality. The first accident occurred on March 19, 1979 as a result of an auto stopping on the tracks and being struck by a train. No injuries or fatalities occurred in this accident. The second accident occurred on December 15, 1990, as a result of an auto stopping on the tracks and being struck by a train. No injuries or fatalities were reported. The third incident occurred on June 12, 2004, resulting in a pedestrian fatality. Records indicate the warning devices were reported to be working as intended in all three accidents.

Alternative routes from this crossing are as follows; to the west 2.15 miles is Joiner Road, an at-grade crossing and to the east 1.81 miles is Prince Road, also an at grade crossing. There is a grade separated crossing at Orange Grove Road located 2.40 miles west of Ruthrauff. Orange Grove Road is the only adjacent crossing that is currently grade separated.

## Train Data

Data provided by the railroad regarding train movements through this crossing are as follows:

**Train Count:** 48 total average trains per day (46 freight, and 2 passenger trains)
**Train Speed:** 79 mph passenger / 70 mph freight
**Thru Freight/Switching Moves:** All moves through this crossing are thru freight. (According to UP Senior Manager of Train Operations, Sam Lopez Sr., there are no switching moves across this crossing.) This crossing is used by Amtrak twice per day, three times per week.

## Schools and Bus Routes

There are several schools within the City that are near the Ruthrauff Road crossing. They are:

- ✓ Laguna Elementary School @ 5001 N Shannon Rd, Tucson, AZ 85705
- ✓ Walter Douglas Elementary School @ 3302 N Flowing Wells Rd, Tucson, AZ 85705.
- ✓ Homer Davie Elementary School @ 4250 N Romero Rd, Tucson, AZ 85705.
- ✓ Flowing Wells High School @ 3725 N Flowing Wells Rd, Tucson, AZ 85705.

Ruthrauff Road is crossed 8 times per day by local school buses, along with additional crossings for special field trips. On April12, 2011, Staff spoke with Lewis Carloss, Transportation Director for the Flowing Wells Unified School District. Mr. Carloss stated that busses cross several times a day due to the fact that part of their district is west of the tracks at this location.

## Hospitals

The nearest hospital to the Ruthrauff Road crossing is Northwest Medical Center in Marana, which is approximately 3 miles northeast of Ruthrauff Road.

## Hazardous Materials

The railroad gave the following response when asked about hazardous materials crossing this crossing:

***Union Pacific has been unable to obtain any information responsive to this request. It is Union Pacific's understanding that any vehicle carrying hazardous materials may utilize public crossings unless otherwise posted, but Union Pacific knows of no way it can investigate or determine whether such vehicles use these crossings [sic] or with what frequency.***

## Zoning

Staff requested the Railroad provide information regarding the type of zoning in adjacent areas from the crossing. The following was the response:

***Union Pacific believes that the second part of CW 1.9 calls for speculation as to whether new housing developments, industrial parks, or other developments will occur in the future. In addition, Union Pacific does not have access to such information, but instead must rely on information provided by others. With those caveats, Union Pacific responds as follows:***

***Pima Association of Governments has a 2007 Land Use Map that matches the field diagnostic observations. The observed land use from the field diagnostics are shown below:***

| *Crossing* | *2007 Observed Land Use* | *2007 Existing Pima County Land Use* |
|---|---|---|
| *Ruthrauff Road* | *Commercial/Industrial* | *Commercial/Industrial* |

***Pima Association of Governments planning department can better answer the question of future developments. They review development impact studies and regulate zoning. The Pima Association of Governments Planning Department can better answer the question of future developments. They review development impact studies and regulate zoning.***

*Source:* ***1) PAG Land Use Modeling 2007 Land Use Map on http://www.pagnet.org/Documents/LandUse/LandUse2007.pdf***

**Spur Lines**

The Railroad gave the following answer regarding spur lines located in the area:

***Using the definition of a "spur line" or "spur track" as "a stub track of indefinite length diverging from a main track or other track," ACC Regulation R14-5-101(20), no spur lines have been removed within the last three years inside a 10-mile radius of the crossing covered in this application.***

**Federal Highway Administration (FHWA)Guidelines Regarding Grade Separation**

The FHWA Railroad-Highway Grade Crossing Handbook (Revised Second Edition August 2007) provides nine criteria for determining whether highway-rail crossings should be considered for grade separation or otherwise eliminated across the railroad right of way. The Crossing Handbook indicates that grade separation or crossing elimination should be considered whenever one or more of the nine conditions are met. The nine criteria are applied to this crossing application as follows:

| | | Ruthrauff Road |
|---|---|---|
| The highway is a part of the designated Interstate Highway System | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| The highway is otherwise designed to have full controlled access | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| The posted highway speed equals or exceeds 70 mph | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| AADT exceeds 100,000 in urban areas or 50,000 in rural areas | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2030 | No |
| Maximum authorized train speed exceeds 110 mph | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| An average of 150 or more trains per day or 300 million gross tons/year | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040[1] | **Yes** |
| Crossing exposure (trains/day x AADT) exceeds 1M in urban or 250k in rural; or passenger train crossing exposure exceeds 800k in urban or 200k in rural | Crossing Currently meets the criteria[2] | **Yes** |
| | Crossing meets the criteria by 2040[3] | **Yes** |
| Expected accident frequency for active devices with gates, as calculated by the US DOT Accident Prediction Formula including five-year accident history, exceeds 0.5 | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | N/A |
| Vehicle delay exceeds 40 vehicle hours per day | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040[4] | **Yes** |

N/A = Information was not available.

This table utilizes the most recent projected ADT data for Ruthrauff Road – 49,170 vpd for the year 2040.

[1]The Railroad is projected to exceed 300 million gross tons as of 2016. This projection is based on the fact that the Railroad is currently exceeding 217 million gross tons with 46 trains per day and is projected to run twice the number of trains (at lengths of up to 8,000 feet instead of the current length of 6,000 feet) by 2016.

[2]The current crossing exposure for Ruthrauff Road is 1.2 million

[2]The current crossing exposure for Ruthrauff Road is 1.2 million
[3] The projected crossing exposure utilizing the most recent projected VPD data for Ruthrauff Road is 4.1 million
[4]Staff notes that the crossing satisfied this criteria using projections for 2030 ADT which forecasted a lower VPD of 44,000 than the 2040 projection of 49,170 VPD. *See* Staff Report filed November 7, 2008 Docket No. RR-03639A-08-0054. Staff has requested the Railroad to provide an updated vehicular delay hours per day calculation.

**Vehicular Delays at Crossings**

Based on the current single track configuration, the Railroad gave the following response about delay time for vehicles at the crossing in this application. The delay time is measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset.

***Delays for vehicular (roadway) traffic caused by trains occupying a crossing depend on the length and speed of each train traversing the crossing. Because each train can be unique for these values it would be impossible for Union Pacific accurately to provide the time of delay for vehicular traffic either while allowing trains to pass the crossing or because trains are stopped in the crossing. With that caveat, Union Pacific responds as follows:***

***Union Pacific operations are governed by maximum allowable speeds as identified by timetable. Trains at the crossing involved in this application operate at timetable speeds of 65 mph and the average length of trains is approximately 6,000 feet. At that train length and speed, the average delay for vehicular traffic (1) to allow the train to pass at this crossing, measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset, is approximately 1.549 minutes.***

***The average time vehicular traffic is delayed (2) due to trains stopped on the track for any purpose, measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset, varies according to the condition creating the blockage. These varied conditions include mechanical failure such as a broken air hose, a grade crossing accident, or operations such as trains meeting or passing. Given the variety of possible conditions causing trains to be stopped on a crossing, Union Pacific does not catalog the average time vehicular traffic is delayed by stopped trains.***

***With that caveat, Union Pacific responds as follows: A.R.S. § 40-852 requires that, except in cases of unavoidable accident, a train blocking a crossing for more than 15 minutes must be cut to facilitate traffic flow. ACC Regulation R14-5-104(C)(7) and Union Pacific's operating practices allow a train to block a public grade crossing for no more than 10 continuous minutes, unless the train is continuously moving in the same direction during the entire time it occupies the crossing, or the blockage is caused by wrecks, derailments, acts of nature, mechanical failure, or other emergency conditions.***

A commonly used measure outlined in the FHWA Guidelines; the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is currently met at this crossing. It should be noted that the

criteria identified in the FHWA material are not mandates, but guidelines established by the Federal Highway Administration, which serve to alert those having jurisdiction that potential problems may arise.

**Grade Separation**

With regard to grade separating this crossing, the Railroad gave the following response:

***Union Pacific understands that whether a grade separation is needed is primarily a question of mobility and convenience for vehicular traffic on the roadway, not safety. That is because an at-grade crossing can be safe without constructing a grade separation and eliminating the grade crossing. Based on this understanding, Union Pacific believes the question of whether a grade separation is needed is irrelevant to Union Pacific's application to add a second mainline track at this grade crossing.***

***In addition to the foregoing, grade separation is not appropriate for determination at this time because, as Union Pacific understands the situation, the local communities and roadway authorities have not finally determined what priority grade separations at these crossings would have with respect to other public projects, when construction of grade separations could be begun and finished, and how grade separations would be funded. Grade separation was not decided on at this time because the communities and roadway authorities should decide the final timing of the proposed grade separations. Before they have done so, it would be premature to consider grade separation now in connection with Union Pacific's application to double-track and improve these crossings.***

***Furthermore, Union Pacific believes the two crossings involved in this application are safe without constructing grade separations. This conclusion is supported by the fact that the Federal Highway Administration authorizes the use of gates and lights at multiple-track grade crossings as proposed in this application.***

***With those caveats, Union Pacific responds as follows:***

***Union Pacific is aware that grade separations are planned at Ina Road and Ruthrauff Road as part of a joint ADOT/RTA project that includes four interchanges and I-10 reconstruction. The Preliminary Engineering and Environmental Assessment for this project is currently underway and is due to be completed in September 2011. The final design will begin in early 2012 with a potential construction start after 2020. The project is currently locally and federally funded. For more information please contact ADOT's project manager:***

**Asadul (Asad) Karim**
**ADOT Roadway Predesign Section A**
**205 S. 17th Avenue, Mail Drop 605E**
**Phoenix, Arizona 85007-6807**
**Phone: (602) 712-6799**
**Email: AKarim@azdot.gov**

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, the crossing in this application meets one of the nine criteria for consideration of grade separation. Projected data indicates that this crossing may meet three of the nine criteria by the year 2040. Therefore, based on data available

to Staff today Staff believes that Ruthrauff Road should be grade separated within the next 12 years.

**Crossing Closure**

The area surrounding this crossing is highly developed with both commercial and industrial businesses. To close this crossing would have a negative affect on many of the local businesses. Therefore, Staff would not recommend closure of this crossing at this time.

**INA ROAD**

In Decision No. 54197 dated October 10, 1984, flashing lights, automatic gates and bells were installed at Ina Road crossing.

On March 1, 2007, Staff, the Railroad, County, and the Town participated in diagnostic review of Ina Road. All parties present were in agreement to the proposed improvements at the crossing. The following is a break down of the Ina Road crossing in this application, including information about the crossing that was provided to Staff by the Railroad and its contractors.

**Geographical Information**

Ina Road is located within the County, in the Town of Marana. According to the U.S. 2010 Census the population of the Town is 34,961. Marana was the fourth fastest-growing municipality, among all cities and towns in Arizona of any size from 1990 to 2000. The Town extends along I-10, from the line between Pinal and Pima County to the Tucson city line, with the exception of the area around the unincorporated community of Rillito.

The rail line runs in a south-east to north-west direction, parallel to the I-10 Frontage Road. Ina Road is a major east to west arterial road. The surrounding areas are all commercial development. Ina Road has an I-10 interchange as well. The Ina Road crossing is located in the northwest part of Marana, near the intersection of Ina Road and Westbound I-10 Frontage Road. Marana is the road authority with jurisdiction over Ina Road at the crossing.

The proposed second main track at Ina Road will be north of the existing main track. The Railroad will re-profile a portion of the four lane urban asphalt road to meet the new track. The Railroad's proposed upgrades will replace the existing incandescent flashing lights, gate mechanisms, bells and detection circuitry, with the latest in industry standards to include: 12 inch LED flashing lights, gates, bells, and constant warning time circuitry. New side light flashers will also be added for the I-10 Frontage Road traffic. A new concrete crossing surface will be added, along with replacing any impacted pavement markings. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing upgrade is $772,900. The Railroad is paying for the entire cost of the crossing improvements, broken down by signal and crossing surface improvements, with the signal work costing $ 600,000 and the crossing surface $172,900.

The traffic data provided by Assistant Director of Public Works, Keith Brann of the Town and Jennifer Crumbliss of HDR Engineering, indicate the ADT for Ina Road is 31,700 vpd. This traffic count was taken in 2009. Traffic projections for this crossing for the year 2040 are estimated to be 52,090 vpd. The current LOS for the four lane road is LOS D/C for eastbound AM/PM traffic and LOS B/F for westbound AM/PM traffic.

The posted speed limit is 45 MPH. Staff records, as well as FRA accident/incident records indicate seven accidents at this crossing. The first accident occurred on July 9, 1976. Staff records indicate that the train struck an auto in this incident. No casualties occurred. The second accident occurred on October 11, 1976, in which the driver drove around the gate and was struck by the train. No injuries or fatalities occurred. On November 26, 1991, a third incident occurred when the driver stopped the vehicle on the track and was struck by the train with no casualties occurring. The fourth accident occurred on February 15, 1997, when a train struck an abandoned golf cart on the tracks. There were no causalities reported. The next incident occurred on November 29, 1999, when a train struck an auto on the tracks with one injury reported. The sixth incident occurred on February 22, 2001, with records indicating the auto was stopped on the tracks and struck by the train with the gates down. No casualties were reported. The last incident at this crossing was on June 29, 2003, and resulted in no injuries or fatalities. The driver drove around the down gates and ran into the side of the train. Records indicate the warning devices were reported to be working as intended in all seven accidents.

Alternative routes from this crossing are as follows; to the west .65 miles to Massingale Road, and to the east 1.32 miles to Orange Grove Road. Massingale Road is an at-grade crossing, while Orange Grove Road is and underpass at the tracks.

It should be noted, that Marana and ADOT have secured funding for a grade separation at Ina Road. The funding is coming from both ADOT and from a Regional Transit Authority ("RTA") sales tax. The cost of the grade separation at this location is currently estimated to be $50,250,000. Marana and ADOT are looking to start this project possibly in 2013 and will be part of a RTA roadway project.

**Train Data**

Data provided by the railroad regarding train movements through Ina Road are as follows:

**Train Count:** 48 total average trains per day (46 freight, and 2 passenger trains)
**Train Speed:** 79 mph passenger / 70 mph freight
**Thru Freight/Switching Moves:** All train movements through these crossings are through movements with no switching operations, according to Union Pacific, Senior Manager of Train Operations, Sam Lopez. This crossing is used by Amtrak twice per day, three times per week.

**Schools and Bus Routes**

There are three schools located within the area of this crossing. They are:

- ✓ Marjorie W. Estes Elem. School @ 11279 W. Grier Rd, Marana, AZ 85653
- ✓ Marana Middle School @ 11279 W. Grier Rd, Marana, AZ 85653
- ✓ Marana High School @ 12000 W. Emigh Road, Tucson, AZ 85743.

Per Alisha Meza, Operations Manager of Transportation for Marana Unified School District, school buses cross Ina Road at least 8 times per day.

Per Alisha Meza, Operations Manager of Transportation for Marana Unified School District, school buses cross Ina Road at least 8 times per day.

## Hospitals

The nearest hospital to this crossing is North West Medical Center in Marana, which is located approximately 3 miles from the Ina Road crossing.

## Hazardous Materials

The railroad gave the following response when asked about hazardous materials crossing this crossing:

> ***Union Pacific has been unable to obtain any information responsive to this request. It is Union Pacific's understanding that any vehicle carrying hazardous materials may utilize public crossings unless otherwise posted, but Union Pacific knows of no way it can investigate or determine whether such vehicles use these crossings [sic] or with what frequency.***

## Zoning

Staff requested the Railroad provide information regarding the type of zoning in adjacent areas from the crossing. The following was their response:

***Pima Association of Governments has a 2007 Land Use Map that matches the field diagnostic observations. The observed land uses from the field diagnostics are shown below:***

| *Crossing* | *2007 Observed Land Use* | *2007 Existing Pima County Land Use* |
|---|---|---|
| *Ina Road* | *Commercial* | *Commercial* |

***Pima Association of Governments planning departments can better answer the question of future developments. They review development impact studies and regulate zoning.***

## Spur Lines

The Union Pacific gave the following answer regarding spur lines located in the area:

***Using the definition of a "spur line" or "spur track" as "a stub track of indefinite length diverging from a main track or other track," ACC Regulation R14-5-101(20), no spur lines have been removed within the last three years inside a 10-mile radius of any crossings covered in this application.***

## FHWA Guidelines Regarding Grade Separation

The nine FHWA Railroad-Highway Grade Crossing criteria, as applied to this crossing application, are as follows:

| | | **Ina** |
|---|---|---|
| The highway is a part of the designated Interstate Highway System | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |

| | | |
|---|---|---|
| AADT exceeds 100,000 in urban areas or 50,000 in rural areas | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| Maximum authorized train speed exceeds 110 mph | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | No |
| An average of 150 or more trains per day or 300 million gross tons/year | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040[1] | **Yes** |
| Crossing exposure (trains/day x AADT) exceeds 1M in urban or 250k in rural; or passenger train crossing exposure exceeds 800k in urban or 200k in rural[1] | Crossing Currently meets the criteria[2] | **Yes** |
| | Crossing meets the criteria by 2040[3] | **Yes** |
| Expected accident frequency for active devices with gates, as calculated by the US DOT Accident Prediction Formula including five-year accident history, exceeds 0.5 | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040 | N/A |
| Vehicle delay exceeds 40 vehicle hours per day | Crossing Currently meets the criteria | No |
| | Crossing meets the criteria by 2040[4] | **Yes** |

N/A = Information was not available.
This table utilizes the most recent projected ADT data as follows: Ina – 52,090 (2040).
[1]The Railroad is projected to exceed 300 million gross tons as of 2016. This projection is based on the fact that the Railroad is currently exceeding 217 million gross tons with 46 trains per day and is projected to run twice the number of trains (at lengths of up to 8,000 feet instead of the current length of 6,000 feet) by 2016.
[2] The current crossing exposure for Ina is 1.5 million.
[3]The projected crossing exposures utilizing the most recent projected ADT data are as follows: Ina- 4.4 million.
[4] Staff notes that the crossing satisfied this criteria using projections for 2030 ADT which forecasted a lower VPD of 44,400 than the 2040 projection of 52,090 VPD. *See* Staff Report filed September 26, 2008 Docket No. RR-03639A-08-0036. Staff has requested the Railroad to provide an updated vehicular delay hours per day calculation

**Vehicular Delays at Crossings**

Based on the current single track configuration, the Railroad gave the following response about delay time for vehicles at the crossing in this application. The delay time is measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset.

***Delays for vehicular (roadway) traffic caused by trains occupying a crossing depend on the length and speed of each train traversing the crossing. Because each train can be unique for these values it would be impossible for Union Pacific accurately to provide the time of delay for vehicular traffic either while allowing trains to pass the crossing or because trains are stopped in the crossing. With that caveat, Union Pacific responds as follows:***

***Union Pacific operations are governed by maximum allowable speeds as identified by timetable. Trains at the crossing involved in this application operate at timetable speeds of 65 mph and the average length of trains is approximately 6,000 feet. At that train length and speed, the average delay for vehicular traffic (1) to allow the train to pass at this crossing, measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset, is approximately 1.549 minutes.***

***The average time vehicular traffic is delayed (2) due to trains stopped on the track for any purpose, measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset, varies according to the condition creating the blockage. These varied conditions include mechanical failure such as a broken air hose, a grade crossing accident, or operations such as trains meeting or passing. Given the variety of possible conditions causing trains to be stopped on a crossing, Union Pacific does not catalog the average time vehicular traffic is delayed by stopped trains.***

***With that caveat, Union Pacific responds as follows: A.R.S. § 40-852 requires that, except in cases of unavoidable accident, a train blocking a crossing for more than 15 minutes must be cut to facilitate traffic flow. ACC Regulation R14-5-104(C)(7) and Union Pacific's operating practices allow a train to block a public grade crossing for no more than 10 continuous minutes, unless the train is continuously moving in the same direction during the entire time it occupies the crossing, or the blockage is caused by wrecks, derailments, acts of nature, mechanical failure, or other emergency conditions.***

The Crossing Exposure Index is currently met at this crossing. It should be noted that the criteria identified in the FHWA material are not mandates, but Guidelines established by the Federal Highway Administration, which serve to alert those having jurisdiction that potential problems may arise.

**Grade Separation**

With regard to grade separating this crossing, the Railroad gave the following response:

***Response: Union Pacific understands that whether a grade separation is needed is primarily a question of mobility and convenience for vehicular traffic on the roadway, not safety. That is because an at-grade crossing can be safe without constructing a grade separation and eliminating the grade crossing. Based on this understanding, Union Pacific believes the question of whether a grade separation is needed is irrelevant to Union Pacific's application to add a second mainline track at these grade crossings.***

***In addition to the foregoing, grade separation is not appropriate for determination at this time because, as Union Pacific understands the situation, the local communities and roadway authorities have not finally determined what priority grade separations at these crossings would have with respect to other public projects, when construction of grade separations could be begun and finished, and how grade separations would be funded. Grade separation was not decided on at this time because the communities and roadway authorities should decide the final timing of the proposed grade separations. Before they have done so, it would be premature to consider grade separation now in connection with Union Pacific's application to double-track and improve these crossings.***

***Furthermore, Union Pacific believes the two crossings involved in this application are safe without constructing grade separations. This conclusion is supported by the fact that the Federal Highway Administration authorizes the use of gates and lights at multiple-track grade crossings as proposed in this application. With those caveats, Union Pacific responds as follows:***

***Union Pacific is aware that grade separations are planned at Ina Road and Ruthrauff Road as part of a joint ADOT/RTA project that includes four interchanges and I-10 reconstruction. The Preliminary Engineering and Environmental Assessment for this project is currently underway and is due to be completed in September 2011. The final design will begin in early 2012 with a potential construction start after 2020. The project is currently locally and federally funded. For more information please contact ADOT's project manager:***

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**205 S. 17th Avenue, Mail Drop 605E**
**Phoenix, Arizona 85007-6807**
**Phone: (602) 712-6799**
**Email: AKarim@azdot.gov**

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on currently existing conditions, the crossing in this application meet some of the nine criteria for consideration of grade separation. Projected data indicates that the crossing will meet at least three of the nine criteria by the year 2040. Therefore, based on data available to Staff today Staff believes that Ina Road should be grade separated within the next 12 years.

**Crossing Closure**

The area this crossing is located in is highly developed with both commercial and industrial businesses. To close the crossing would have a negative affect on many of the local businesses. Therefore, Staff would not recommend closure of any of this crossing at this time.

**Staff Conclusions**

Having reviewed all applicable data, Staff supports Union Pacific's application. Staff believes that the upgrades are in the public interest and are reasonable. Staff believes that the measures proposed by Union Pacific are consistent with other similar at-grade crossings in the State and will provide for the public's safety. Therefore, Staff recommends approval of Union Pacific's application.

Brian H. Lehman
Railroad Safety Supervisor
Safety Division

Originator: BHL

COPIES of the foregoing mailed
This 22nd day of April, 2011 to:

Docket No. RR-03639A-11-0051

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# Appendix "A"


W Ina Rd
N Shannon Rd
W Cholla Blvd
W Sunset Rd
N Oldfather Rd
N Thornydale Rd
W Orange Grove Rd
N Camino De La Tierra
N Kain Ave
INA ROAD
RUTHRAUFF ROAD
W El Camino Del Cerro
N Silverbell Rd
N Cam De Oeste
W Sweetwater Dr
© 2011 Google
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5991 ft
Imagery Date: Mar 9, 2011
32°18'49.44" N 111°02'44.68" W elev 2216 ft
Eye alt 23008 ft
Google


W Mars St
W Calle Jacobo
Cam De La Cruz
W Calle Marco
N Ulene Pl
N Ca
Marlin
INA ROAD
Kino
10
Road Model Home Center
W Starcommerce Way
Ina Road Ind
© 2011 Google
© 2011 Europa Technologies
1266 ft
Imagery Date: Mar 9, 2011
32°20'15.76" N 111°03'57.38" W elev. 2202 ft
Eye alt 6565 ft
Google


Gibson
Flores Villas
Tucsonita
RUTHRAUFF ROAD
N Casa Grande Hwy
N Freeway Rd
W Ruthrauff Rd
N Shannon Rd
W Curtis Rd
W Emerald Cir
N Sunrise Ave
N Plano Ave
W Gold Ave
Gold Ave
N Kain Ave
W Zinnia Ave
W El Camino Del Cerro
10
1251 ft
© 2011 Google
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Google
Imagery Date: Mar 9, 2011
32°17'42.55" N 111°01'43.19" W elev 2239 ft
Eye alt 6523 ft